a first light source configured to emit a first light flux having a first wavelength for recording and/or reproducing a second information recording medium provided with a transparent substrate;

a second light source configured to emit a second light flux having a second wavelength longer than the first wavelength, for recording and/or reproducing a first information recording medium provided with a transparent substrate;

a third light source configured to emit a third light flux having a third wavelength longer than the second wavelength, for recording and/or reproducing a third information recording medium provided with a transparent substrate having a thickness thicker than that of each of the first and second information recording mediums; and

an objective lens configured to converge the first, second and third light fluxes onto the second, first, and third optical information recording mediums respectively;

wherein when recording and/or reproducing information is conducted for the second information recording medium, the first light flux emitted from the first light source enters the objective lens as a parallel light flux and is converged on the second information recording medium,

when recording and/or reproducing information is conducted for the first information recording medium, the second light flux emitted from the second light source enters the objective lens as a parallel light flux and is converged on the first information recording medium, and

when recording and/or reproducing information is conducted for the third information recording medium, the third light flux emitted from the third light source

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enters the objective lens as a divergent light flux and is converged on the third information recording medium.

138. The optical pickup apparatus of claim 137, wherein the first light flux having the first wavelength is a blue laser beam.

139. The optical pickup apparatus of claim 138, wherein the second optical information recording medium is a next-generation high density optical disk which information is recorded on and/or reproduced from with the blue laser beam.

140. The optical pickup apparatus of claim 137, wherein the thickness of the transparent substrate of the first optical information recording medium is equal to that of the second information recording medium.

141. The optical pickup apparatus of claim 137, wherein when NA2 is an image side numerical aperture of the objective lens necessary for recording and/or reproducing information for the first optical information medium, NA1 is an image side numerical aperture of the objective lens necessary for recording and/or reproducing information for the second optical information medium, and NA3 is an image side numerical aperture of the objective lens necessary for recording and/or reproducing information for the third optical information medium, NA1 and NA2 are larger than NA3.

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142. The optical pickup apparatus of claim 141, wherein the objective lens comprises a diffractive structure to correct spherical aberrations of a light flux within NA2 on the first information recording medium and spherical aberrations of a light flux within NA1 on the second information recording medium respectively to become within a diffraction limitation characteristic.

143. The optical pickup apparatus of claim 141, wherein the third light flux emitted from the third light source enters the objective lens as a divergent light flux so that spherical aberrations of a light flux within NA3 due to the thickness of the transparent substrate of the third optical information recording medium is corrected within a diffraction limitation characteristic.

144. The optical pickup apparatus of claim 141, wherein NA1 is equal to NA2.

145. The optical pickup apparatus of claim 141, wherein when recording and/or reproducing information is conducted for the third optical information recording medium, a spherical aberration of a light flux having passed through a region of the objective lens having a numerical aperture larger than NA3 is flare on the third optical information recording medium.

146. The optical pickup apparatus of claim 137, further comprising a coupling lens to make the first light flux emitted from the first light source and the second light

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flux emitted from the second light source to be a parallel light flux to enter the objective lens respectively.

147. The optical pickup apparatus of claim 137, further comprising a coupling lens to make the third light flux emitted from the third light source to be a divergent light flux to enter the objective lens.

148. The optical pickup apparatus of claim 137, wherein the objective lens comprises a diffractive structure.

149. The optical pickup apparatus of claim 137, wherein the objective lens is a single lens.

REMARKS

The subject matter claimed in this application is fully supported by, for example, p. 192, line 19 - p. 194, line 11, and p. 241, line 3 - p. 243, line 5 in the specification. No new matter has been added in the application.

If there is any fee due in connection with the filing of this Preliminary Amendment, please charge the fee to our Deposit Account No. 06-0916.

Respectfully submitted,

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Dated: July 3, 2003

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